

Disclosed herein is a novel isolated population of stem cells, called spoc cells, that can be induced, either *in vivo* or *in vitro*, to differentiate into cardiomyocytes. Methods are disclosed herein to differentiate the spoc cells, and to utilize these spoc cells for screening agents that affect cardiomyocytes. Methods are also provided herein to utilize spoc cells in therapeutic applications for the treatment of myocardial defects, such as areas of ischemic or traumatic damage.